Customer No.: 31561
Application No.: 10/064,527
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AMENDMENTS

In The Claims

1. (original) A brightness correction apparatus of a plasma display, of which a brightness error of ideal display brightness and actual display brightness for each gray scale has been established, the apparatus comprising:

an inverse γ conversion lookup unit, to receive an input signal of a currently displaying pixel, and to convert the input signal into a first gray scale data to be output according to an inverse γ conversion rule;

an error diffusion unit, coupled to the inverse γ conversion lookup unit to receive the first gray scale data, and to modify the first gray scale data into a second gray scale data recorded as a display brightness error of the currently displaying pixel by considering a display brightness error of a neighboring pixel of the currently displaying pixel; and

a gray scale lookup unit, coupled to the error diffusion unit to receive an integral portion of the second gray scale data, and to look up a gray scale allocation table to obtain a sustain pulse number of the currently displaying pixel.

2. (original) The apparatus according to claim 1, wherein the error diffusion unit further comprises:

an adder, to receive the first gray scale data to obtain the second gray scale data by summing the first gray scale data and a weighted display brightness error of the neighboring pixel;

a brightness error lookup circuit, coupled to the adder to receive the integral portion of the second gray scale data, and to look up a brightness error table to obtain the brightness error of the currently displaying pixel; and

a weighted error supply circuit, coupled to the adder and the brightness error lookup circuit to save the brightness errors of the sequentially displayed currently displaying pixel and the neighboring pixel as the display brightness errors thereof, and to weight the display brightness error of the neighboring pixel to obtain the weighted display brightness error required by the adder.

3. (currently amended) The apparatus according to claim 2, wherein the brightness error table includes a lookup table for the integral portion of the second gray scale data G and the brightness error E, and the brightness error table is established by an actual measured gray scale function of brightness $B_0(G)$ and an ideal gray scale function of brightness B(G) as:

$$E=[(B(G)-B(G_0))/B_0(G)]*G.$$

4. (original) The apparatus according to claim 3, wherein the gray scale allocation includes a lookup table for the table integral portion of the second gray scale data and the sustain pulse number, and the integral portion of some different second gray scale data may correspond

to the same sustain pulse number, while the brightness table must be modified to comply with the corresponding brightness error.

5. (original) The apparatus according to claim 1, wherein the error diffusion unit comprises:

a first adder, to receive the first gray scale data to obtain the second gray scale data by summing the first gray scale data and a weighted display brightness error of the neighboring pixel;

a brightness error lookup circuit, coupled to the first adder to receive the integral portion of the second gray scale data, and to look up a brightness error table to obtain the brightness error of the currently displaying pixel;

a second adder, coupled to the first adder and the brightness error lookup circuit to receive a decimal portion of the second gray scale data and the brightness error of the currently displaying pixel, and to obtain the sum of the integral and decimal portions of the currently displaying pixel as the display brightness error to be output of the currently displaying pixel; and

a weighted error supply circuit, coupled to the first adder and the second adder to save the display brightness errors of the currently displaying pixel and the neighboring pixel, and to weight the display brightness error of the neighboring pixel to obtain the weighted display brightness error required by the adder.

6. (currently amended) The apparatus according to claim 5, wherein the brightness error table includes a lookup table for the integral portion of the second gray scale data G and the brightness error E, and the brightness error table is established by an actual measured gray scale function of brightness $B_0(G)$ and an ideal gray scale function of brightness B(G) as:

$$E=[(B(G)-B(G_0))/B_0(G)]*G_{\_}$$

7. (currently amended) The apparatus according to claim [[3]]6, wherein the gray scale allocation includes a lookup table for the table integral portion of the second gray scale data and the sustain pulse number, and the integral portion of some different second gray scale data may correspond to the same sustain pulse number, while the brightness table must be modified to comply with the corresponding brightness error.

8. (original) A brightness correction apparatus of a plasma display, of which a brightness error of ideal display brightness and actual display brightness for each gray scale has been established, the apparatus comprising:

an inverse γ conversion lookup unit, to receive an input signal of a currently displaying pixel, and to convert the input signal into a first gray scale data to be output according to an inverse γ conversion rule;

an error diffusion unit, coupled to the inverse γ conversion lookup unit to receive the first gray scale data, and to modify the first gray scale data into a second gray scale data recorded as a

display brightness error of the currently displaying pixel by considering a display brightness error of a neighboring pixel of the currently displaying pixel; and

an integer gray scale lookup unit, coupled to the error diffusion unit to receive an integral portion of the second gray scale data, and to look up an integer gray scale table to obtain a third gray scale data; and

a gray scale allocation lookup unit, coupled to the integer gray scale lookup unit to receive the third gray scale data, and to look up a gray scale allocation table to obtain a sustain pulse number of the currently displaying pixel to be output.

9. (original) The apparatus according to claim 8, wherein the error diffusion unit comprises:

a first adder, to receive the first gray scale data and to obtain the second gray scale data by summing the first gray scale data and a weighted display brightness error of the neighboring pixel;

a brightness error lookup circuit, coupled to the first adder to receive the integral portion of the second gray scale data, and to look up a brightness error table to obtain the brightness error of the currently displaying pixel;

a subtractor, coupled to the first adder and the integer gray scale lookup unit to receive the second and third gray scale data to obtain a gray scale error between the second and the third gray scale data;

a second adder, coupled to the subtractor and the brightness error lookup circuit to

receive the gray scale error and the brightness error of the currently displaying pixel, and to obtain the display brightness error to be output by summing of the gray scale error and the brightness error of the currently displaying pixel; and

a weighted error supply circuit, coupled to the first adder and the second adder to save the display brightness errors of the currently displaying pixel and the neighboring pixel, and to weight the display brightness error of the neighboring pixel to obtain the weighted display brightness error required by the adder.

10. (currently amended) The apparatus according to claim 9, wherein the brightness error table includes a lookup table for the integral portion of the second gray scale data G and the brightness error E, and the brightness error table is established by an actual measured gray scale function of brightness $B_0(G)$ and an ideal gray scale function of brightness B(G) as:

$E=[(B(G)-B(G_0))/B_0(G)]*G$.

11. (original) A brightness correction method of a plasma display, comprising:

obtaining a brightness error for each gray scale by measuring ideal display brightness and actual display brightness thereof, so as to establish a brightness error table;

receiving a first gray scale data of a currently displaying pixel;

adding the first gray scale data to a weighted display brightness of a neighboring pixel of the currently displaying pixel as a second gray scale data;

looking up the brightness error table to obtain the brightness error of the second gray scale data; and

recording the brightness error of the second gray scale data as the display brightness error of the currently displaying pixel.

12. (original) The method according to claim 11, wherein the step of recording the brightness error includes recording a decimal portion of the second gray scale data.

13. (currently amended) The method according to claim 11, the brightness error table includes a lookup table for the integral portion of the second gray scale data G and the brightness error E, and the brightness error table is established by an actual measured gray scale function of brightness $B_0(G)$ and an ideal gray scale function of brightness B(G) as:

$E=[(B(G)-B(G_0))/B_0(G)]*G$.